CHAPTER 4

BALLAST

4-1. General. Ballast is a select material placed on the subgrade to:

a. Restrain the track laterally, longitudinally, and vertically under the dynamic loads imposed by trains and the thermal stresses induced in the rails by changing temperature.

b. Provide adequate drainage of the track.

c. Distribute the load of the track and trains to prevent overstressing the subgrade.

4-2. Selection criteria.

a. Considerations for selecting materials to be used as ballast include:

(1) Size and gradation.
(2) Shape (angularity).
(3) Weight.
(4) Strength.
(5) Durability.
(6) Cleanliness.
(7) Economics.

b. New ballast materials used in the maintenance of Army track shall meet the requirements specified in the AREA *Manual For Railway Engineering*, chapter 1, part 2, for the gradation requirements given in table 4-1.

Table 4-1. AREA recommended gradations for ballast

Size No.	Nominal Size Square Opening in.	Amounts Finer Than Each Sieve (Square Opening) Percent by Weight							
		2-1/2 in.	2 in.	1-1/2 in.	1 in.	3/4 in.	1/2 in.	3/8 in.	No. 4
3	2 to 1	100	95-100	35-70	0-15		0-5		
4A	2 to 3/4	100	90-100	60-90	10-35	0-10		0-3	
4	1-1/2 to 3/4		100	90-100	20-55	0-15		0-5	
5	1 to 3/8			100	90-100	40-75	15-35	0-15	0-5

Note: Size Numbers 3, 4A, and 4 are typically mainline ballast materials. Size Number 5 is typically yard ballast material.

Table 4-1. AREA recommended gradations for ballast.

4-3. Maintenance.

a. The ballast section should be clean, free-draining, and free of vegetation, soil (mud), and other foreign materials.

b. During major maintenance or track rehabilitation, dirty or fouled crushed stone or slag ballast meeting the requirements of paragraph 4-2*b* may be cleaned or reconditioned and reused.

c. Ballast materials shall not be allowed to cover or be at a level above the top of the ties.